

FINAL YEAR PROJECT REPORT.
DIPLOMA IN MECHANICAL ENGINEERING,
SCHOOL OF ENGINEERING,
MARA INSTITUTE OF TECHNOLOGY,
SHAH ALAM,
SELANGOR.

TITLE : TO DESIGN A SUITABLE CASTING MOULD FOR THE
PRODUCTION OF DOOR KEYS.

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ABSTRACT.

Casting represent the simplest and most direct route to produce an engineering shape from metal and should consequently be the cheapest route. In essence, the process simply consists of making a mould of the required shape, in these case is door keys. Filling the mould with molten metals of the desired composition of alloys and allowing it to solidify so that when separated with the mould it will have taken up the shape of the cavity.

For the production of door keys the simplest, cheapest and the best available method is by Plaster Mold Casting. Therefore all effort is aimed to design the most practical and best shape and technique of the cope and drag required for the production of door keys. The design come out by making keys at a time. The four keys is place opposite to each other for quick flow of molten metal.

The mold for the key is prepared by pouring Plaster of Paris (Ca SO_4) into the cope and drag. The plaster will take the shape of the master pattern (keys) in the cope and drag. When the molten metal is poured through the pouring gate , the runner, pattern and out through the riser, the required of the shape of door keys will be obtained.

ACKNOWLEDGEMENT.

IN THE NAME OF ALLAH, THE BENEFICIENT, THE MERCIFUL.

We glorify Allah and blessings on and salute the noble prophet his companions and those who follow him in upholding the cause of the right religion.

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Dedicated to father and mother, whom we loved and loved with respect.

Wassalam.

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INTRODUCTION.

By any measure, casting is one of the most important of manufacturing process. Cast parts range in size from a fraction of an inch and weighing a fraction an ounce, such as the individual teeth in a zipper to 30 or more feet in weighing many tons, such as the huge propellar and stern frames of ocean liners. In many cases cast parts are ready for use as they come from the casting should be made as compact as possible. The casting shape should allow the pattern to be removed from the mold and the cores from the core boxes. To facilitate the removal, provision should be made for draft on the casting's vertical surfaces. The draft amount should be greater for the inside surfaces than for the outside surfaces of the casting.

The position of the casting surfaces during the metal pouring must be taken into account, since gas holes may develop on the casting's upper horizontal surfaces. Critical surface of the casting should lie at the bottom part of the mould.

The casting is designed with regard to its shrinkage and to the interference with the shrinkage, the latter created by the mold and cores, and by the difference in cooling rate for different parts of the casting. The impeded shrinkage of the casting results in residual stresses there in, and many cause it distortion and cracking. Hence uniform cooling and free shrinkage of the casting should be provided for.

While a large number of different and highly specialised casting processes are used in modern industry, the following four basic consideration apply to all forms of casting.

- a) The metal to be cast must be able to be melted cleanly and economically. Melting may be done in a variety of furnances with coke, pulverised coal, fuel oil, gas or electricity as fuel.
- b) A suitable mould cavity must be produced, enlarge sufficiently to compensate for the cooling shrinkage of the solidify metal. This mould cavity must have some suitable means of metal access, must allow for the escape of the gasses either trapped in the mould during pouring or form by the action of heat on the